

equipment nor experience. Contracting the plumbing and wiring may be necessary to meet building codes. Pouring and finishing a concrete slab floor on grade requires a certain amount of skill, extra help, and some equipment.

These are all expensive parts of the building process. Although you won't save as much on the total cost by contracting part of the work, you can reduce the construction time. If this work is done by reliable contractors you can be more assured of getting a loan to cover the building costs.

As other new materials and methods become available, you must decide whether they are better and less expensive than time-tried ones and whether they will last for many years. This is not easy to judge. Get all the information you can and take time to study manufacturers' claims. If possible, inspect installations in your area before you make your decision. Better be safe than sorry.

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## Pressure-Treated Wood Foundations

HOMES ARE NOW being built with foundations of pressure-treated wood walls instead of masonry block or concrete. Builders and homeowners select treated wood foundations because they want the advantages of a warm, comfortable, and more attractive house. They want a house that can be built faster in all types of weather and at less expense.

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AUTHOR GERALD A. KOENIGSHOF is Branch Chief, Forest Products Requirements, Forest Service.



Top and above left, building lot is excavated, then gravel or crushed stone is placed in the excavation. Left, pressure-treated wood basement foundation is set on gravel in excavation. Above, crawlspace foundation is set on crushed stone in trench.

House foundations of pressure-treated wood may be used for basement or crawl space walls. These walls are framed with lumber and plywood just as are typical above-ground wood frame walls except that the lumber and plywood are pressure treated. To construct a basement with treated wood walls, the ground is excavated, then gravel or crushed stone is spread over the excavation. Next, a treated wood footing plate is placed on the gravel or crushed stone fill. Finally a treated wood stud wall sheathed with treated plywood is set in place on the footing plate.

To construct a crawl space wall of treated wood, a trench is excavated around the perimeter of the house location, gravel is placed in the bottom of the trench, and then a footing plate and wall similar to a basement wall are set on the gravel. After framing the upper portion of the house, a concrete slab is poured in the basement and earth may be backfilled against the wood foundation wall. Crawl space walls are temporarily braced and backfilled immediately after erection.

How long will a treated wood foundation last? Properly pressure-treated wood foundations are expected to last as long or longer than the average life of wood frame houses on masonry or concrete foundations.

Skyscrapers and large highway bridges are often supported by pressure-treated timber pilings that provide many years of service. Some of these pressure treatments are unacceptable for house foundations because of their odor, unsuitable appearance, or capacity to soil clothing or irritate skin when touched.



*Quality mark required on lumber or plywood used in residential foundations.*

Wood for house foundations pressure-treated with waterborne salt is odor free and clean and has an attractive appearance. The treatment destroys the food value of the wood, making it immune to decay and rot by fungus or to attack by termites. A special quality mark put on each piece of lumber and plywood assures builders and owners that this material has been properly treated for residential wood foundations.

Treated wood foundation basements are more comfortable to live in for several reasons.

Insulation can be added to a wood wall for less than the cost to strip a masonry wall. This provides a wall that has one-fourth the heat loss of a conventional basement wall. Although heating and cooling costs are reduced by a small amount, a more comfortable living space is probably more important to the homeowner.

Walls are easily finished by the owner or the builder because no stripping is required. Paneling or gypsum wallboard can be applied by nailing directly to the studs.

Treated wood foundation basements have proved to be essentially leak free and to provide dry living space below grade; this is attributable to the porous gravel or crushed stone fill under the floor and wall, in combination with a sump where soils are poorly drained. Water from rainstorms cannot be trapped outside the wall, and the ground water table is held well below floor level.

Inspections by the Forest Service found that studs in treated wood foundation walls are nearly as dry as studs in the walls above grade. Occupants of houses with treated wood foundations often stress their satisfaction with a basement that is warm and damp free.

Treated wood foundation walls offer unlimited combinations of attractive wall finishes both inside and out. Inside wall finishes may be essentially the same as used in conventional above-wall wood frame construction. The outside may be brick, stucco, or wood sid-



*Finished home with wood frame foundation has appearance of conventional house.*

ing or virtually any other finish used in conventional construction. Textured plywood and wood stains make available many combinations of color and texture that are pleasing to look at.

Treated wood foundations are being used in all price classes of homes.

Families have benefited from treated wood foundations in two ways. They have obtained more living space at less cost and their houses are constructed much faster.

The Farmers Home Administration office in Richmond, Va. has recently developed house designs using treated wood foundations. These designs provide 53 percent more living space at only 8 percent more cost than was possible with previous designs.

Crawl space foundation walls have been most typically used to keep structural costs down. By switching to a bi-level design, where the lower level uses treated wood walls, it is possible to provide nearly twice the living space at essentially the same cost as a house on a crawl space. Owners can easily finish off the inside of treated wood foundation walls with gypsum wall-board or wood paneling.

As a result, families now can get more attractive and comfortable living space at less cost.

In Fern Cliff, Va. the Farmers Home Administration demonstrated the speed of constructing a house with treated wood foundations.

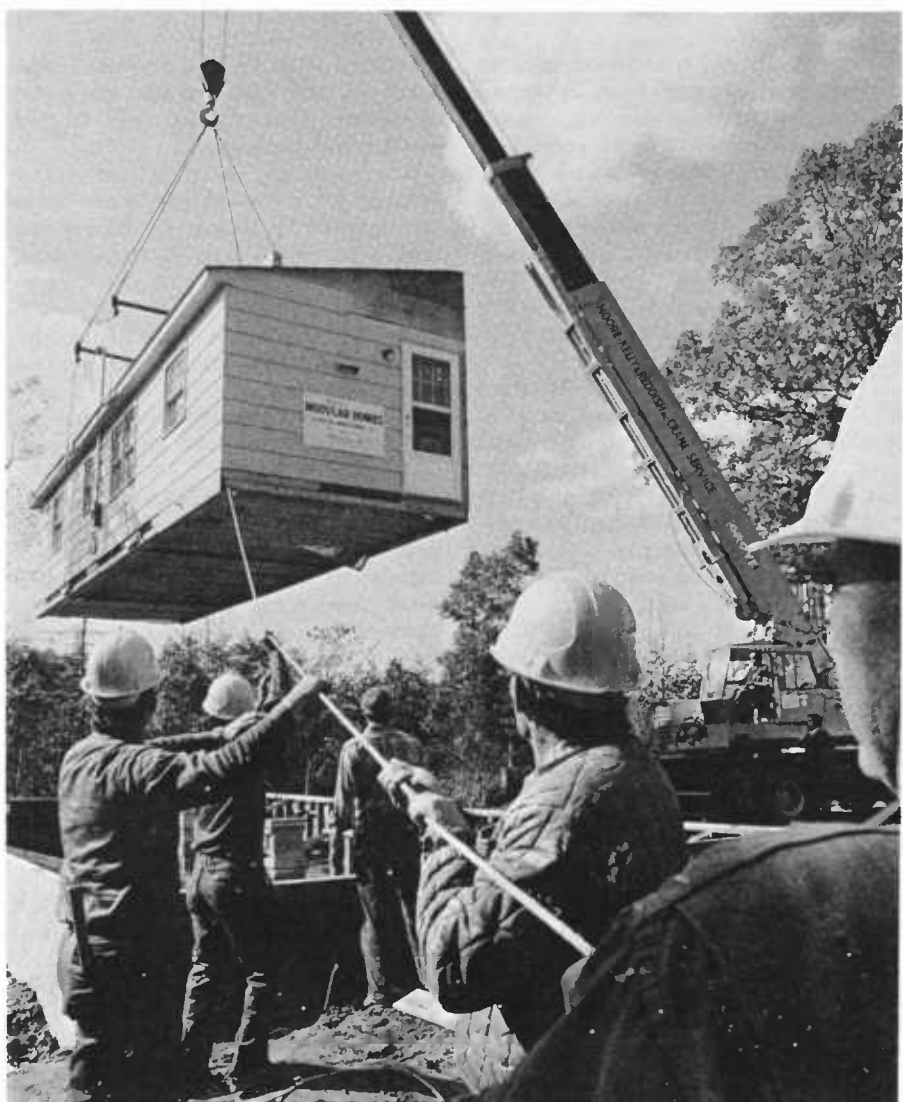
Starting in the morning with a raw building lot, a treated wood foundation was installed by 10 a.m. Backfilling was completed by 11 a.m. A sectionalized house had been placed on the foundation by 11:30 a.m.

By mid-afternoon the telephone, water, electricity, and heat systems were in operation. The farm family started moving into their new home at 3:30 p.m. and by 4:30 p.m. the yard had been landscaped.

Treated wood foundations can be installed in approximately one-sixth the time required to install a conventional foundation. Factory fabricated treated wood foundation walls for an entire basement are often erected in only one hour.

As a result, owners and builders benefit by using treated wood foundations because they eliminate costly construction delays at the job site.

An interesting feature of wood foundation walls is their resistance to cracking caused by settling soil. Small amounts of soil settlement under conventional concrete footings can result in unsightly large cracks in conventional





*Treated wood foundation, started at 8:30 a.m., has been installed by 10 a.m. Sectionalized house is placed on foundation by 11:30 a.m. Family starts moving in at 3:30 p.m. Landscaping is finished at 4:30 p.m.*

masonry or concrete walls. Treated plywood and lumber framing used in wood foundation walls acts like a large diaphragm or deep girder that effectively "bridges" the areas of soil settlement. Cracked wood walls are unheard of.

Often people ask how gravel footings under a basement wall can support the house without settling. No concrete footings are used.

The answer is that soil under the footing ultimately supports the house above. Footings are only as effective as the soil which supports them, regardless of the type of footing used. The footings must be deep and wide enough so downward loads are adequately distributed to the supporting soil.

Coarse sand, washed pea gravel, and  $\frac{3}{4}$ -inch crushed stone are excellent footing material because they are classified as a noncompressive soil. In addition, stone and gravel footings of this type are easily leveled during construction. Because of their porous nature these types of footings are a key factor in preventing water accumulation outside the wall. Preventing such water buildup outside basement walls is important in preventing basement leakage.

You may hear a treated wood foundation referred to as the "All Weather Wood Foundation." Wood foundations can be erected in colder and wetter weather than is possible with conventional systems.

Mortar for masonry block cannot be placed during raining or drizzly weather, and concrete will not cure properly in below freezing temperatures. Muddy sites prevent trucks from delivering heavy masonry or concrete products but do not stop deliveries and

installation of prefabricated wood foundations.

As a result, builders using wood foundations have been able to extend their building season into periods of wet and cold weather. Hence the name "All Weather Wood Foundation" accurately describes one advantage of the system.

Wood foundations are usually supplied by qualified fabricators who custom design and fabricate treated wood foundations. All sizes and grades of materials are selected on the basis of the soil characteristics at the site, lateral loads from soil pressure on the walls, downward loads on the structure, and strength properties of the lumber and plywood used in the foundation. Thus, a treated wood foundation is engineered to meet job requirements.

Conventional foundations are usually not selected on the basis of engineering design but rather as specified by the local building code. Because of this, a conventional wall may be stronger than necessary, which is wasteful of material, or may not be strong enough, which results in an unsafe condition.

Collapse of masonry walls during rainstorms—in addition to problems with leakage and cracked walls—led the National Association of Home Builders and the Federal Housing Administration to seek better ways of building basement walls. Research by the Forest Service, the American Wood Preservers Institute, and the National Forest Products Association resulted in the promising new idea of building better foundations by using pressure-treated lumber and plywood.